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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,208

04/14/2005

Mitsuru Ueda

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EXAMINER

LEE, SIN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

05/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,208	<b>Applicant(s)</b> UEDA ET AL.	
	<b>Examiner</b> Sin J. Lee	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 and 19-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-7, 19-23, 25, 27, 30, 32 and 34 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9-17, 24, 26, 28, 29, 31, 33 and 35 is/are rejected.
- 7) ☒ Claim(s) 4 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. In view of the amendment, previous 102(b) rejection on claims 1-8, 10, 12, 16 and 17 over Nishikubo et al (JP'656), previous 103(a) rejection on claims 9, 11 and 15 over Nishikubo in view of Niinomi et al, and previous 103(a) rejection on claims 13 and 14 over Nishikubo in view of Niinomi and Zhong are hereby withdrawn.
2. In view of the amendment, previous 102(e) rejection on claim 24 over Hanabata et al (WO'131) is hereby withdrawn.
3. In view of the amendment, previous 102(b) rejection on claim 25 over Sakamizu et al (Chem. Abstract '830) is hereby withdrawn.
4. In view of the amendment, previous 103(a) rejection on claims 1-8, 10, 12, 16 and 17 over Ito et al'517, previous 103(a) rejection on claims 9, 11 and 15 over Ito in view of Niinomi and previous 103(a) rejection on claims 13 and 14 over Ito in view of Niinomi and Zhong are hereby withdrawn.

### ***Claim Rejections - 35 USC § 102***

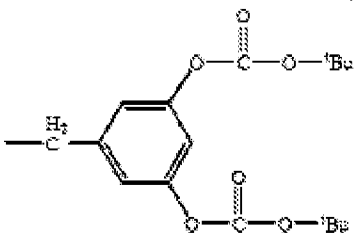
5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 26, 28, 29, 33 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al (Chemical Abstract 131:293195 for "Novel Dissolution Inhibitors Based on Calixarene Derivatives for Use in Chemical Amplification Resists", Polymeric Materials Science and Engineering (1999), vol.81, pg.51-52).

Ito teaches a chemical amplification resist containing calix[4]resorcinarene, in which all eight OH groups were protected with acid-labile group of t-BuOCOCH<sub>2</sub> (see

the second page of the abstract enclosed for the chemical structure). Thus, Ito teaches present compound of claims 26, 28 and 29 (present X, Y and Z are ether bonds, present B, C and D are tert-butyloxycarbonylmethyl groups). Thus, Ito teaches present inventions of claims 26, 28, 29, 33 and 35.

7. Claims 1-3, 10, 12, 16, 17, 24 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Tully et al ("Dendrimer-Based Chemically Amplified Resists for Sub-100 nm Lithography", Proceedings of SPIE, Vol.3999 (2000), pg.1202-1206).

Tully teaches (see pg.1204) a resist composition containing [G-2] dendrimer (see Figure 1 for its chemical structure), a photoacid generator and propylene glycol methyl ether acetate (a solvent). This dendrimer teaches present compound of formula (1) (present X, Y and Z being ether bonds, present B, C and D being Ar-CH<sub>2</sub>- groups substituted by present ROCO- in which R represent the following;



(this group is the same group as shown in present specification, pg.22). Thus, Tully teaches present inventions of claims 1-3, 10, 12, 16, 17, 24 and 31.

### ***Claim Rejections - 35 USC § 103***

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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9. Claims 9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tully et al ("Dendrimer-Based Chemically Amplified Resists for Sub-100 nm Lithography", Proceedings of SPIE, Vol.3999 (2000), pg.1202-1206) in view of Niinomi et al (Proceedings of SPIE, Vol.2724, Advances in Resist Technology and Processing XIII (1996), pg.174-185).

Tully does not explicitly teach present range for the basic impurity content. It is well known in the art that basic impurities in a resist composition causes the problem of post exposure delay (PED), as evidenced by Niinomi et al, pg.174, last paragraph. Therefore, it would have been obvious to one skilled in the art to reduce any basic impurity content in Tully's photoresist material as low as possible in order to avoid the PED problem. Present range of 10 ppm or less for the basic impurity would have been obvious to one skilled in the art at the time the invention was made, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, Tully in view of Niinomi would render obvious present inventions of claims 9, 11 and 15.

10. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tully et al ("Dendrimer-Based Chemically Amplified Resists for Sub-100 nm Lithography", Proceedings of SPIE, Vol.3999 (2000), pg.1202-1206) in view of Niinomi et al (Proceedings of SPIE, Vol.2724, Advances in Resist Technology and Processing XIII (1996), pg.174-185) and Zhong et al (7,013,965).

As discussed above, based on Tully in view of Niinomi, it would have been obvious to reduce basic impurity in Nishikubo's composition in order to avoid the PED problem. It is known in the art to remove basic impurities in a composition by treating the composition with acid and with ion exchange resins as evidenced by Zhong et al, col.5, lines 9-10. Therefore, it would have been obvious to one skilled in the art to reduce any basic impurity in Tully's composition by using art-known methods such as treating with acid and ion exchange resins in order to avoid the PED problem. Therefore, Tully in view of Niinomi and Zhong would render obvious present inventions of claims 13 and 14.

***Allowable Subject Matter***

11. Claims 4 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Tully does not teach or suggest present B, C and D of claim 4 or claim 8.

12. Claims 5-7, 19-23, 25, 27, 30, 32 and 34 are allowed. Tully does not teach or suggest present B, C and D of claim 5 or claim 21. Tully does not teach or suggest present A group of claim 22, claim 25 or claim 27. Also, Ito does not teach or suggest present A group of claim 5, claim 21 or claim 27. Ito does not teach or suggest present B, C and D of claim 22 or claim 25.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333.

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The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/  
Primary Examiner, Art Unit 1795  
May 26, 2008